west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2897
Plant ID No.:	061-00169
Applicant:	Equitrans Limited Partnership
Facility Name:	Blacksville Station
Location:	Monongalia County
NAICS Code:	48621
Application Type:	Construction
Received Date:	September 12, 2011
Engineer Assigned:	David Keatley
Fee Amount:	$2,000 ($1,000 application fee + 1,000 NSPS)
Date Fee Received:	September 15, 2011
Complete Date:	October 18, 2011
Due Date:	January 16, 2012
Applicant Ad Date:	September 15, 2011
Newspaper:	*The Dominion Post*
UTM's:	Easting: 569.638 km Northing: 4,397.099 km Zone: 17
Description:	Installation of four (4) compressor engines, six (6) microturbine generators, one (1) natural gas heater, and six (6) storage tanks.

DESCRIPTION OF PROCESS

Blacksville Station will be a natural gas transmission facility. There will be four (4) Caterpillar G3616 LE 4,735 bhp four-stroke lean-burn natural gas-fired compressor engines. These engines will be equipped with Pollution Control Associates, Inc. (Model: ADCAT) oxidation catalysts which will reduce emissions of CO by 93%, VOCs by 50%, and formaldehyde by 83%. There will be six Capstone 87.2 hp microturbine generators to provide electrical power to the station. There will be one 0.25 MMBTU/hr natural gas-fired fuel gas heater. There will also be six tanks: one (1) for pipeline liquids, two (2) new oil, one (1) used oil, and two (2) for ethylene glycol.

Natural gas from nearby wells is gathered into pipes. The gas enters the compressor station where a suction scrubber removes free liquids. The free liquids go to the Pipeline Liquids Tank (S12). The natural gas is then compressed by one of the compressor

engines. The engines combust natural gas and those emissions are sent to a catalyst. The catalyst reduces certain emissions. The compressed gas then enters a coalescing filter that removes oil and free liquids. The liquids produced will be sent to the Pipeline Liquids Tank (S12). The two new oil tanks each being 5,000 gallons are to lubricate the engines. The used oil tank is a 4,000 gallon tank. The new monoethylene glycol tank is 2,000 gallons used as antifreeze for the engines. The used monoethylene glycol is 2,000 gallons.

SITE INSPECTION

Brian Tephabock conducted a site visit of the proposed location on October 12, 2011. He met the following EQT personnel: Kim Walker, Stephanie Frazier, Dale Moore, and Ted Charletta at the site. No compressor station equipment was on site and site excavation had not begun either. The station will be approximately 1,500 feet from the nearest residence.

Directions from application: From Charleston take I79 N to exit 155. Turn right onto Chaplin Hill Road. Turn left onto US-19 S/SR 7 E. Turn left onto SR 7W. Follow 7 W for approximately 12 miles to the site access road, which is on the right just past Days Run Road.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

For the Caterpillar Engines emission factors are from the catalyst manufacturer (CM), the engine manufacturer (EM), and AP-42. Emission factors from the EM in g/bhp-hr are: 0.5 for NO_x. Emissions factors for the CM in g/bhp-hr are: CO, 0.19; VOC, 0.32; and Formaldehyde, 0.04. The emission factors from AP-42 in lb/MMBTU are: PM, 0.00999 ; and SO_2, 0.000588.

For the mico Turbine Generators the emission factors were from the turbine manufacturer (TM) and AP-42. Emission factors from the TM in lb/MWh are: NO_x, 0.17; CO, 1.3; VOC, 0.1. Emission factors from AP-42 in lb/MMBtu are: SO_2, 0.0034; and 0.0066 for PM.

The Natural gas Line Heater using emission factors from AP-42. The emission factors in lb/MMscf are: NO_x, 100; CO, 84; SO_2, 0.6; PM, 7.6; and VOC, 5.5.

Emissions for the Pipeline Liquids Tank (S12), working and breathing emissions were estimated using TANKS 4.0.9d and the flash emissions were estimated using the Vasquez - Beggs Solution. For the TANKS analysis, volume = 10,000 gallons, throughput = 10,000 gallons/yr. The tank was considered to be a two-phase liquid in the analysis.

The emissions from the other tanks were considered negligible due to the combination of small tank size and low vapor pressure of tank contents.

Source ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
S1, S2, S3, S4	Caterpillar G3616 LE Compressor Engine 4,735 bhp	NO_x	5.22	22.86
		CO	2.01	8.80
		VOC	3.29	14.40
		SO_2	0.02	0.08
		PM	0.32	1.40
		Formaldehyde	0.46	2.02
S5, S6, S7, S8, S9, S10	Capstone C65 low NO_x 65 KW Microturbine	NO_x	0.01	0.05
		CO	0.08	0.37
		VOC	0.01	0.03
		SO_2	<0.01	0.02
		PM	0.01	0.02
S11	Natural Gas Line Heater 0.25 MMBTU/hr	NO_x	0.02	0.11
		CO	0.02	0.09
		VOC	0.0013	0.0058
		SO_2	0.00015	0.00063
		PM	0.0018	0.008
S12	Pipeline Liquids Tank	VOCs	1.45	6.35

The following table represents the total facility emissions:

Pollutant	Maximum Annual Facility Wide Emissions (tons/year)
Nitrogen Oxides	91.84
Carbon Monoxide	37.92
Volatile Organic Compounds	63.65
Particulate Matter	7.04
Sulfur Dioxide	0.41
Formaldehyde	8.08

REGULATORY APPLICABILITY

45CSR2 - *To Prevent and Control Particulate Air Pollution From Combustion of Fuel in Indirect Heat Exchangers*

The natural gas line heater (S11) at this facility meets the definition for fuel burning unit (section 2.10). This heater is less than 10 mmBTU and is exempt from the following sections: 4,5,6,8, and 9.

This fuel burning unit (S11) is however subject a 10% opacity limit.

45CSR10 - *To Prevent and Control Air Pollution From the Emissions of Sulfur Oxides*

Natural gas line heater S11 is a fuel burning unit that has a 0.25 MMBTU heat capacity rate. S11 Type 'b' fuel burning unit, which is below the 10 MMBTU threshold and therefore S11 are exempt from sections 3, 6, 7, and 8 (Section 10.1). This facility is in Monogalia County and is in Priority Classification III. This heater is not consider a manufacturing process, refinery, or process gas stream.

45CSR13 - *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation*

45CSR13 applies to this source due to the fact that they exceed the regulatory emission threshold for regulated air pollutants of 6 lb/hr and 10 ton/year (NO_x, CO and VOCs). Since this source required a Construction Permit a $1,000 application was paid.

45CSR16 - *Standards of Performance for New Stationary Sources Pursuant to 40CFR60*

45CSR16 incorporates by reference the standards of performance for new stationary sources (40CFR60). Blacksville Station has four engines (S1 - S4) that are subject to 40CFR60 Subpart JJJJ, and is therefore subject to 45CSR16.

45CSR22 - *Air Quality Management Fee Program*

The facility is subject to the requirements of 45CSR22. This source is a 8D source and shall pay an annual fee of $500. Since this source is subject to an NSPS (Subpart JJJJ) an additional $1,000 NSPS fee was paid.

40CFR60 Subpart JJJJ - *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

40CFR60 Subpart JJJJ sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the date of construction, date of manufacture, and horsepower (hp) of the spark ignition internal combustion engine. This subpart applies to engines S1, S2, S3 and S4 because the site will commence construction after June 12, 2006 engines will be manufactured on or after July 1, 2007 and exceeds 500 hp. These engines will have a manufacture date after January 1, 2011 and are required to meet the following emission standards: NOx 1.0 g/hp-hr, CO 2.0 g/hp-hr, and VOC 0.7

g/hp-hr. To demonstrate compliance with the emission standards all four engines will be required to have an initial performance test and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first. The performance tests will be for the regulated air pollutants NO_x, CO, and VOCs. All four engines will also have to keep maintenance records.

Unless otherwise stated WVDEP DAQ did not determine whether the registrant is subjectto an area source air toxics standard requiring Generally Achievable Control Technology (GACT) promulgated after January 1, 2007 pursuant to 40 CFR 63, including the area source air toxics provisions of 40 CFR 63, Subpart HH and 40 CFR 63, Subpart ZZZZ.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Formaldehyde

Formaldehyde is used mainly to produce resins used in particleboard products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

AIR QUALITY IMPACT ANALYSIS

Based on the annual emission rates this facility will not be a major source as defined by 45CSR14, so air quality modeling was not required.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates Equitrans Limited Partnership natural gas transmission station should meet applicable requirements of state rules and federal regulations. It is recommended that Equitrans Limited Partnership's proposed Blacksville natural gas transmission station should be granted a 45CSR13 construction permit for their facility.

David Keatley
Permit Writer

Date